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THEME : FORMAL EDUCATION;
SUB-THEME : TECHNOLOGY FOR SCALING UP ODL PROGRAMMES

1.0 Introduction

Global economy and technology are two of the factors shaping the learning process in the world today, their effects on the nature of adult learning are staggering, adult learners realize that they must continue their learning past formal school system in order to function at work, home and in their communities. There is always a need for new knowledge and updating absolute knowledge. For Adult learners, going back to school is often scary, exciting or a challenge after years of being out of school. Often times without number, adult reading disability comes to light when the time of studying and frequent writing of assignments arises.

Learning disability is an "umbrella" term describing a number of other specific learning disabilities: Dyslexia, Dyscalculia, dyspraxia, and so on. An adult's disability could be as a result of poor vision, hearing, emotional disturbance, short memory span. There often appears to be a gap between an individual 's potential and actual achievement, learning disability is often referred to as 'hidden disability' Nevertheless it is a lifelong challenge which cannot be cured but with appropriate support and intervention, people with learning disability can achieve success in school, at work and all other areas.
This study will be limited to reading disabilities in adult learners.

1.1 Reading Disability in Adult Learners

Reading is a social, transactional act that cannot adequately be understood by studying a single person or classroom, but rather requires a social context and critique to be understood adequately. (Lankshear and Knobel, 2003; Luke, 2000).

According to the Learning Disabilities Association of America (LDAA, 2010) adults with reading disability may exhibit behaviours such as:

- Writing well but not able to read well;
- Short attention span
- Impulsive or easily distracted;
- Poor comprehension skill;
- Misreading;

- Confusion of similar letters or their order;
- Difficulty in following small prints and columns;
- Confusion in right and left or up and down.

Adult with reading disability may exhibit some of all the above but not necessarily all of them. In reviewing research on reading disabilities, Catts and Kamhi (1999), identified genetic, neurological and cognitive-perceptual explanations. There exists a strong evidence supporting dyslexia as a genetically transmitted disorder. That is, adults with reading disability may be trying to cope with their child's disability as well as theirs. Some adults become aware of their disability as part of the process during which their child is identified as having RD.

Adults with RD can also be characterized as slow reader compared with their non disabled peers. Slow reading can be caused by lack of skills needed for automatic word identification and ineffective reading comprehension skills. Convincing evidence is that dyslexics' phonological processing deficits are not as a result of developmental delays and as such can continue into adult life. These may represent an important barrier to the acquisition of fluent words recognition and consequently affect reading comprehension. (Bruick, 1992; Stanovich, 1986).

Low self esteem is the first casualty in adults with reading disability. They tend to grow ashamed and loose self confidence (leading sometimes to attrition) as they struggle with a skill their classmates master easily. Feeling of inadequacy often leads adult with RD to distance themselves from their peers for fear of being exposed. (Speckman et al, 1992). Reviewing literature on social and affective adjustment of adults with RD, Hoy and Manglitz,(1998) found that adults with RD reported fewer social contacts and higher incidence of emotional adjustment difficulties than their peers. Cunnigham & Stanovich,(1998) are also of the opinion that adults with RD can be expected to have less well developed language skills either as a cause or as a result of reading deficiencies. This is because; the amount of information read has an effect on important language abilities. (Stanovitch & west, 1989)

As children, individuals learn to read but as adults they read to learn, as they grow they have difficulty in meeting expected reading achievement levels, however, reading disabled adults may be left behind by information revolution (as it becomes available on the internet) that is largely text based. It is also noteworthy that adults in this category often gravitate towards less academic forms of education. The discouraging news is that they may successfully complete such programmes at a low rate. (Murray, et al, 2000; Sitlington & Frank, 1990; Wagner et al, 1991).

Adults with RD can learn to become effective and active reader through instructions and assistive technologies aimed at increasing their metacognitive skills. This will help them to apply strategies to meet their specific needs. Such assistive technology is the Optical character recognition (OCR).

1.2 Optical Character Recognition

Devices that can be used to compensate for disabilities are referred to as Assistive technology (AT). In defining AT, the Technology-related Act of 1988, referred to it as "any item, piece of equipment or product system acquired commercially off-the-shelf, modified, or customized, which is used to increase, maintain or improve the capabilities of individuals with disabilities. AT can modify the way an individual with RD receive or express information in a manner that accentuates their strength. It has been observed that not all AT are appropriate for all individuals in all situations. Raskind, (1998) suggest that in selecting appropriate technology for adults with RD, four elements must be considered: the individual; specific contexts of interaction; function to be performed; and the specific technology. The selection of an appropriate technology will depend on the individual's strength and weakness. This study looks at the individual strength in reading as well as his/her prior knowledge and interest in using AT. The goal here is to allow individuals to function effectively in various roles as employees, lifelong learners and citizens.

The OCR, a high tech device scans and converts written texts into computer document that are made readable by a speech synthesis / screen review system. According to Silver – Pacunia, (2004) OCR is scanning software that digitizes print from a piece of paper and converts such images into document files. The use of OCR system with speech synthesis will help a learner with poor reading skills with strong receptive oral language abilities to read and comprehend with greater ease. It is also used for test preparation as well as acquiring strategies for future learning related to life and to work.

Purpose of the study: The rate of attrition of adult learners in higher learning is very high, though ODL has been said to help learners to have control over time and space, however the rate of learning disabilities such as RD is prominent. This calls for not just interactivity but a teaching and learning method that could allow adult learners to participate fully and interact with an assistive method that could help them in determining their style learning style according to their needs. ODL providers will then be able to come up with ways of fully utilizing the OCR to develop learners' academic achievement and performance. Specifically, the objectives of this study are:

-To assess the impact of the OCR on the comprehension and reading abilities of adult learners with RD;

-to determine how learners using OCR and non OCR users would perform in reading exercises;

- to identify the interaction effect of OCR on gender in Reading achievement exercises.

2.0 Research Questions

The following research questions were raised and answered in this study:

1. What is the impact of the OCR on the reading text achievement of adult learners CLL/WT?
2. What is the impact of gender on reading skills achievement?
3. What will be the interaction effect of OCR and gender on reading achievement of learners?

2.1 Research Hypotheses

The following hypotheses s were generated and tested in this study:

Ho1. There is no significant difference in the mean score of adult learners exposed to OCR and those not exposed.

Ho2. There is no significant difference on gender as measured by learners' posttest mean score.

3.0 Methodology

Learners perceived to have RD through diagnostic tests and counseling formed the population of this study. They were evaluated in a manner related to their age, experience and career objectives.

The Centre for Lifelong Learning and Workplace training (CLL/WT) is an arm of NOUN. Programmes such as Business Communication, GST and other programmes are on offer. The GST is a course that cut across all departments, therefore the population consists mainly of learners offering the GST103. The sampling involves the random selection of 40 learners this was done through the randomization of 10 learners from other faculties of the institution. Furthermore the learners were randomly divided into two groups of 20/20 each. This was done with the help of table of random numbers. The experimental groups were further divided into 4 groups of 5 learners each while same was done to the controlled group.

The research instruments used for data analysis were selected topics in both the GST 103 course materials and selected reading text downloaded from the web.

The treatment plan entails the use of OCR. This was done within the spate of 12 weeks. Reading text from GST course materials as well as downloaded text from the web were scanned and inserted to a file; this was converted into usable word document through Microsoft office document for the OCR users (see attached). Respondents were made to read selected text and answer comprehension and summary text to test their reading rate, achievement and comprehension rate. The OCR groups were taught how to scan and convert text on their own; this was sent to other group members and the researcher for evaluation and feedback. At the end of the 12 weeks, comprehension and reading abilities of respondents were tested with the administration of post treatment reading and answering text from the topics given to both the control and experimental groups. The data was analysed by using standard deviation and analysis of covariance on the mean scores of adult learners with RD in pretest and posttest.

4.0 Data Results

Table 1: The mean score and standard deviation of respondents to post-test scores on reading comprehension text (treatment X Gender levels)

				Gender			
OCR groups	X	SD	N	Level	X	SD	N
Control	4.13	1.59	20	female	6.48	2.86	18
Treatment	8.17	2.29	20	male	5.69	2.77	22
Total	6.12	2.82	40	total	6.12	2.82	40

As shown on table 1 above the post test reading mean score of 8.17and standard deviation of 2.29 were recorded for respondents exposed to OCR user group while the non-user had mean score of 4.13 and a standard deviation of 1.59. Based on this data, it can be concluded that OCR user groups achieved desired reading rate, comprehension and independence more than the non users. It was also indicated that male gender has a post test score of 5.69 and standard deviation of 2.77 as against the female counterparts who performed better in the two way interaction with OCR.

Table 2: ANCOVA of learners' post-treatment achievement scores on reading comprehension (Gender levels).

Sources of variation	Sum of	DF	Mean	F	Significance

	squares		square		
Covariate (Pre-test scores)	65.936	1	65.936	277.947	
Main effects	254.409	2	127.205	53.915	*.00
Treatment	247.932	1	247.932	105.085	.00*
Gender	2.627	1	2.627	1.113	.29
2-way interaction	3.109	1	3.109	1.318	.25
Treatment x gender	3.109	1	3.109	1.318	.25
Explained	323.454	4	80.863	34.274	
Residual Significant @0.06 levels	122.686	35	2.359		
Total	446.140	39	7.967		

Table 2 above indicates that reading comprehension achievement of learners is significant. Here treatment as the main effect is significant on the OCR user group achievement in reading improvement**.** The observed F value of 105.085 is significant at 0.00 levels, thus it is significant at 0.05, and therefore, the null hypothesis of no significant effect is rejected. Based on this, it is concluded that OCR use improved the reading rate and comprehension level of learners with RD. Further it was observed that F-value of 1.113 for gender as a factor on whether female respondents performed better than their male counterpart is not significant at 0.29 as opposed to table 1's report that it was significant at 0.05 levels. Thus the hypothesis of gender not being significant was accepted. The interaction effect and gender on learner's performance in given comprehension text is significant as shown on table 2. The table shows F-value as being 13.8; this is significant at 0.25 and not significant at 0.05 levels. Based on this also, the null hypothesis of no significant effect is accepted.

4.1 Discussion

Assistive technology such as the OCR has been shown to be a device that could help learners with RD to improve or modify the ways they read to comprehend; this will in turn accentuate their strength. The computer and other forms of technologies have come to stay as a very useful device in our day-to-day activities. If this then be the case, Assistive technological devices associated with the systems will definitely have influence on the life of all. It has been shown by the findings of this study that the OCR is a vital tool in assisting adult learners with RD to improve in their learning task – it creates an atmosphere of collaboration and full participation of respondents and instant feedback given through the internet. The findings find support in Elkind, Black & Murray (1999), when they find that adults with RD read faster and comprehend better using OCR than when reading without its support.

Gender wise, the finding was not significant. This suggests that male and female respondents did not differ in reading comprehension improvement. This also implies that the effect of instruction on reading comprehension is consistent. Hingins and Raskind (1998) also supports the findings that learners with RD can be helped through OCR, when they found OCR to be of greatest support for persons with severe reading disability.

5.0 Recommendation

Based on the findings of this study, the following were recommended: The readability of teaching materials is an important issue in Assistive technology device. Several versions of materials used in the computers can be produced, since the learners have different types of needs. In addition, language use for instructions should be accessible to all learners, learners should be able to gain a sense of achievement in what they do, and achievable goals have to be set for learners. The key word in the use of Assertive technologies is Capability; this is to ensure learners becoming independent user of the device, able to apply what they have learned to other situations. Also the use of computers practically and theoretically should be embedded in every learning activities, this will enable learners to become computer savvy. ODL providers should be trained and re-trained in the use of new technologies as the need arises so as to be able to meet up with the new demands of the society.

6.0 Conclusion

The use of OCR open up a world of subject for learners with RD. this can make the difference between an individual's self reliance and dependence on others, this will go a long way in enhancing their knowledge for lifelong learning. OCR can enable participatory flexible, autonomous, contextualized learning to take place it can also make learners be able to learn from one another and exchange good practice more systematically (Educational policy Vol.70, 2009).

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